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## **Sun-spiders of Turkey (Arachnida: Solpugida), list of species and key to genera**

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### **Abstract**

This work includes a list of 33 species and 1 subspecies of 12 genera of 5 families of order Solpugida recorded from Turkey. Twenty species are endemic. The distribution of every species is included. A key to the recorded families and genera is prepared.

Keywords: Sun-spiders, Solpugida, Arachnida, Turkey.

### **Introduction**

It is necessary to know the solpugid species recorded from a country before starting the study of this arachnid order in this country. Therefore, the following list is prepared as a first step to assist the arachnologist who likes to study Order Solpugida in Turkey. This preliminary list is extracted from the works of Roewer (1934, 1941) and Harvey (2003). The other references are listed within them. A key to the previously recorded genera from Turkey is prepared depending on the keys of Roewer (1934) and El-Hennawy (1990).

The idea of preparing this work came after reading the work of Bayram *et al.* (2005) in their study of the arachnid fauna of Kırıkkale Province and my visit to Turkey due to the kind invitation of my friend Kadir Kunt and the Turkish Arachnological Society this year where I met my friend Mohammad İsmail Varol who was eager to know more and more about the Turkish solpugid species.

In this study, 33 solpugid species and 1 subspecies are recorded, classified within 12 genera and 5 families. Twenty species are endemic, only recorded from Turkey. The distribution of every species is included in the list after species name and the page number in Harvey's catalogue (2003).

### List of Turkish species of Order Solpugida

- Barrussus pentheri* (Werner, 1905) \* p.283: Turkey [Lifos, Erciyeş Dağı, *Kayseri*, and Ereğli-Bor].
- Biton (Biton) tauricus* Roewer, 1941 \* p.225: Turkey [Toros Dağları (Taurus)].
- Biton (Biton) zederbaueri* (Werner, 1905) p.226: Turkey [İllany Dağı]; Israel.
- Blossia anatolica* (Roewer, 1941) \* p.213: Turkey [Toros Dağları (Taurus)].
- Eusimonia nigrescens* Kraepelin, 1899 p.284: Turkey; Greece, Syria.
- Galeodes anatoliae* Turk, 1960 \* p.256: Turkey [Tuz Gölü].
- Galeodes arabs arabs* C.L. Koch, 1842 pp.256-257: Turkey; Algeria, Djibouti, Egypt, Ethiopia, Iran, Iraq, Israel, Kenya, Libya, Morocco, Niger, Oman, Saudi Arabia, Somalia, Sudan, Syria, Tunisia, Yemen.
- Galeodes araneoides* (Pallas, 1772) pp.257-258: Turkey [İzmir and south of İzmir (Smyrna), *İzmir*, Bodrum (Halicarnassus), *Muğla*]; Afghanistan, Armenia, Azerbaijan, Egypt, Iran, Iraq, Israel, Kazakhstan, Russia, Syria, Turkmenistan, Ukraine.
- Galeodes armeniacus* Birula, 1929 p.258: Turkey? [near Ararat mountain]; Armenia, Azerbaijan.
- Galeodes darendensis* Harvey, 2002 \* p.262: Turkey [9 km east of Darend, *Malatya*].
- Galeodes forcipatus* Roewer, 1934 \* p.263: Turkey [Eskişehir, *Eskişehir*].
- Galeodes graecus* C.L. Koch, 1842 pp.263-264: Turkey; Armenia, Bulgaria, Cyprus, Egypt, Greece, Syria.
- Galeodes gromovi* Harvey, 2002 p.264: Turkey [Berdük, *Van*]; Azerbaijan, Iraq.
- Galeodes lapidosus* Roewer, 1934 \* pp.265-266: Turkey [Makri, *Muğla*].
- Galeodes lycaonis* Turk, 1960 \* p.266: Turkey [Aci Gölü].
- Galeodes marginatus* Roewer, 1961 \* p.266: Turkey [Yumurtalık, *Adana*].
- Galeodes ruptor* Roewer, 1934 p.269: Turkey [northern Diyarbakır, *Diyarbakır*]; Greece.
- Galeodes schach* Birula, 1905 p.269: Turkey?; Iran.
- Galeodes separandus* Roewer 1934 \* p.270: Turkey [near Erzurum, *Erzurum*].
- Galeodes subsimilis* Roewer, 1934 \* p.271: Turkey [near Erzurum, *Erzurum*].
- Galeodes taurus* (Roewer, 1934) \* p.271: Turkey [northern Diyarbakır, *Diyarbakır*].
- Galeodes toelgi* Werner, 1922 \* p.271: Turkey [Gavur Dağları (Amanos Dağları), *Hatay*].
- Galeodes viridipilosus* Roewer, 1941 \* p.273: Turkey [Toros Dağları (Taurus)].
- Gluiopsida taurica* Roewer, 1933 \* p.229: Turkey [northern Diyarbakır, Toros Dağları (Taurus), *Diyarbakır*].
- Gluiopsilla discolor* (Kraepelin, 1899) p.229: Turkey [İzmir (Smyrna), *İzmir*]; Algeria, Greece (Rhodes), Somalia, Syria.
- Gluiopsis paphlagoniae* Turk, 1960 \* p.230: Turkey [Ereğli, *Konya*].
- Gnosippus anaticus* Roewer, 1961 \* p.231: Turkey [32 km west of Kayseri, *Kayseri*].
- Gylippus (Gylippus) quaestiunculus* Karsch, 1880 \* p.278: Turkey [Kubek].
- Gylippus (Gylippus) syriacus* (Simon, 1872) p.278: Turkey; Cyprus, Iraq, Israel, Syria.
- Gylippus (Paragylippus) caucasicus* Birula, 1907 p.279: Turkey; Armenia, Azerbaijan, Georgia.
- Gylippus (Paragylippus) caucasicus koenigi* Birula, 1913 \* p.279: Turkey [ca. 10 km east of Oltu, Abusar Dağları, *Erzurum*].

*Gylippus (Paragylippus) monoceros* Werner, 1905 \* p.279: Turkey [Lifos, Erciyeş Dağı, Kayseri].

*Karschia (Karschia) mastigofera* Birula, 1890 p.286: Turkey [Kars, Kars]; Armenia, Georgia.

*Rhagodia obscurior* (Penther, 1913) p.297: Turkey; Iran.

[\* = endemic species]

### Key to Solpugid Families of Turkey

#### 1. Anus : ventrally located

#### Family RHAGODIDAE

Tarsal segmentation : 1-1-1-1

Heavy-bodied; short-legged; small to large (10-60 mm)

Leg 1 : tarsi : with a pretarsus + 2 claws

metatarsi : with a dense ventral clothing of short spinelike setae

Male cheliceral flagellum : paraxially immovable; composed of 2 flattened, curled, setae that form a nearly complete, slightly curved, truncate, hornlike tube on the mesial surface

Distribution : northeastern Africa, southwestern Asia, and Near East.

[27 genera, 98 species]

#### -. Anus : terminally located

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#### 2. Tarsal claws of legs 2 to 4 : setaceous

#### Family GALEODIDAE

Tarsal segmentation : 1-2-2-3

Long-legged; small to large (12-70 mm)

Leg 1 : tarsi : without claws or with 1 or 2 claws

Male cheliceral flagellum : paraxially movable; a single, capitate (terminally enlarged) seta located on the mesial surface

Distribution : northern Africa, and Asia.

[8 genera, 199 species]

#### -. Tarsal claws of legs 2 to 4 : smooth

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#### 3. Leg 1 : tarsi : without claws

#### Family DAESIIDAE

Tarsal segmentation : 1-1-1-1 to 1-2-2-4

Long-legged; tiny to moderate-sized (6-23 mm)

Male cheliceral flagellum : paraxially movable, ovate to irregular membranous structure attached to the mesial surface by a disk

Female genital opercula : not differentiated from other abdominal sternites and not specifically variable

Propeltidium : exterior lobes : fused.

Distribution : Africa, southern Europe, Near East, and South America.

[7 subfamilies, 28 genera, 189 species]

#### -. Leg 1 : tarsi : with 1 or 2 claws

Tarsal segmentation : 1-1-1-1

Small to moderate-sized (8-26 mm); long-legged

Female genital opercula : differentiated from other abdominal sternites and specifically variable

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#### 4. Chelicerae : multidentate

#### Family KARSCHIIDAE

Propeltidium : exterior lobes : posteriorly fused

Male cheliceral flagellum : paraxially immovable; fanlike to coiled, whiplike seta located on the mesial surface, with associated modified setae and a dorsal cheliceral horn

Tiny to moderate-sized (8-20 mm).

Distribution : Asia and Near East to southeastern Europe and northwestern Africa.

[4 genera, 40 species]

#### -. Chelicerae : not multidentate

#### Family GYLIPPIDAE

Propeltidium : exterior lobes : free

Male cheliceral flagellum : paraxially immovable; dorsal, more or less membranous process associated with one or more strongly modified setae

Small to moderate-sized (11-26 mm).

Distribution : central Asia to Near East.

[5 genera, 26 species]

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#### I. Family DAESIIDAE

#### Key to Sub-Families and Genera

a. Tarsal segmentation: 1-1-1-1 ..... Subfamily Gnosippinae  
Ventral spination of tarsus 2-3: 1.2.2.2.2, and tarsus 4: 2.2.2.2.2.2 ..... *Gnosippus* [1 sp.]

b. Tarsal segmentation: 1-1-1-2 ..... Subfamily Blossiinae  
Ventral spination of tarsus 2-3: 2.2.2.2, and tarsus 4: 2.2.2/2.2 ..... *Blossia* [1 sp.]

c. Tarsal segmentation: 1-1-1-3 ..... Subfamily Gluviopsinae  
Ventral spination of tarsus 2-3: 1.2.2.2.2, and tarsus 4: 2.2/2/2.2.2 ... *Gluviopsis* [1 sp.]  
2.2/2/1.2.2 ... *Gluviopsilla* [1 sp.]  
2.2.2/2/0 ..... *Gluviopsida* [1 sp.]

d. Tarsal segmentation: 1-2-2-4 ..... Subfamily Daesiinae  
Ventral spination of tarsus 2-3: 1.1/0, and tarsus 4: 2.2/0/2/0 ..... *Biton* [2 spp.]

#### II. Family GALEODIDAE

*Galeodes* [18 species]

#### III. Family GYLIPPIDAE

*Gylippus* [2 subgenera]

1. Male chelicerae with 2 principal setae; female genital sternites evenly rounded posteriorly ..... *Gylippus* (*Gylippus*) [2 spp.]

-. Male chelicerae with only 1 principal seta; female genital sternites clearly clefted ..... *Gylippus* (*Paragylippus*) [2 spp, 1 ssp..]

#### IV. Family KARSCHIIDAE

#### Key to Genera

1. Ocular area anteriorly with a blunt top, carrying 2 little bristles. Male flagellum like that of *Eusimonia* ..... *Barrussus* [1 sp.]

-. Ocular area normal, only with bristles or occupied with tubular hairs in male ..... 2

2. Male flagellum with a strongly differentiated bristles tuft. Female cheliceral movable finger with 2 or more small intermediate-teeth between front and main teeth ..... *Karschia* [1 sp.]
- . Male flagellum, prolaterally, with a curved, more or less, blunt horn; Ocular area and also the front edge of male's propeltidium only with normal bristles and hairs ..... *Eusimonia* [1 sp.]

**V. Family RHAGODIDAE** *Rhagodia* [1 species]

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